



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,745	03/07/2005	Katsuya Hasegawa	017700-0174	7863

23392 7590 12/11/2008  
FOLEY & LARDNER  
2029 CENTURY PARK EAST  
SUITE 3500  
LOS ANGELES, CA 90067

EXAMINER
----------

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
----------	--------------

1793

MAIL DATE	DELIVERY MODE
-----------	---------------

12/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



### **DETAILED ACTION**

- Applicants amendment along with the arguments filed 08/15/2008 have been considered.
- Claims 1 and 4-10 were amended. Claims 2-3 cancelled. Claims 11-12 newly added. Claims 1, and 4-12 as amended are currently pending with the application.
- The rejection of claim 10 under 35 USC-II Para cited in the last office action is withdrawn.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 10 recites the limitation "said thin film". There is insufficient antecedent basis for this limitation in the claim.

Applicant can overcome this rejection by deleting the phrase "thin" in the claims.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1 and 4-12 are rejected under 35 U.S.C. 103(a) as obvious over Hasegawa et al (J. Japan Inst. Metals, 66(4), Pg 320-328, 2002).

Hasegawa et al teach the preparation of a highly c-axis oriented and aligned Sm123 films over BaZrO<sub>3</sub> (BZO) buffer layer which is formed either over a MgO single crystal or an in plane aligned MgO film as the substrate (Abstract <JP>; Eng Trans: Pg 5-6, Experimental Methods; Pg-12, Last 5-lines; Pg-15, Section 3.3). BZO improved the in-plane alignment of textured Sm123 layer in a stacked structure in both the cases. Both Sm123 and BZO layers were highly textured upon deposition over textured ISD-MgO. Hasegawa et al further teach the lattice match between MgO and BZO and the importance of interface bonding between the layers and interface energies (Abstract; Pg 323 Fig 4-5 <JP>; Eng: Pg-24, I-Para). Further, MgO, BZO and Sm123 have close lattice constants/parameter (Eng: Pg 11 and 26). The out-of-plane and in-plane alignment for ISD-MgO/BZO/Sm123 with cube-on-cube orientation was 10.5 deg and 4.0 deg respectively (Pg 325, Fig-9; Eng: Pg-18). A BaO layer is shared between both BZO and

Art Unit: 1793

Sm123 layers (Pg-326, Fig-11; Eng: Pg-25; Pg-29, Last Para – Pg-30, I-Para). The instant claimed interface energies and their interrelations in claims 1-3 and 6 and the structural relation in claims 4 and 8, matched lattice constant reducing interface energy per claim-5, a perovskite intermediate layer per claim-7 <BZO>, a rock-salt type substrate per claim-9 <MgO> and the stacked structure per claim-10, the prior art composition, its structure and method of making the structure are either same or substantially same as that claimed by the applicants <See Spec, Pg-14, Ln 9-11>, and they will possess the same energy characteristics because “Products of identical chemical composition can not have mutually exclusive properties including energy characteristics.” It has utility as a superconductor wire (Eng, Pg-2, Para-1, and Last 2 Lines).

The prior art does not specifically calculate the energy levels various layers per the claims.

However, deposition of a layer over the substrate becomes thermodynamically stable because of the lower interfacial energy that progresses successively from layer to layer and stacking of crystal lattices. Similarly, the energy for a crystal stacked on the surface will be lower than that for the perfect crystal based on thermodynamics, if one could be found other than theoretically. Conversely, the method steps are tracing the energy levels and their distributions that are already present in the structure of the prior art like a nature phenomenon, and the laws of nature, physical phenomena, and abstract ideas have been held not patentable.” Likewise, Einstein could not patent his celebrated law that  $E=mc^2$ ; nor could Newton have patented the law of gravity.

*Response to Arguments*

Applicants arguments filed 08/15/2008 have been fully considered. In response to the argument that Hasegawa et al does not explicitly teach the energy characteristics as calculated by the instant claimed method steps, and examiner has not identified any portion of the reference that identifies the features; and the case law used is not for the method steps (Res, Pg-6, 8, Last Para to Pg-10, I-Para); the deposition of each successive layer over a substrate obviously meets the energy relations because the interfacial energy is changing as the system tends towards stability attaining the lowest energy. The calculations are deriving the inherent energy characteristics in the prior art system, and properties of the known structure, its relation between the structure, and the method becomes relevant. Conversely, if the energies do not match, the layers will fall apart functionally. Further arguing about the novelty of calculations (Res, Pg-8), there is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter including the energy characteristics is in fact inherent in the prior art reference. *Schering Corp. v. Geneva Pharm. Inc.*, 339 F.3d 1373, 1377, 67 USPQ2d 1664, 1668 (Fed. Cir. 2003). The calculations in the method steps are deriving energies in the established system and not leading to a new system based on the calculations/method steps. In fact, applicant should be aware that the claims border on being improper (nonstatutory) mental steps which do not actually require doing anything.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1793

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/

Dec 06, 2008.

/Stuart Hendrickson/

Primary Examiner, Art Unit 1793